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DEPARTMENT OF REAL ESTATE, CONSTRUCTION MANAGEMENT, AND QUANTITY SURVEYING

A COMPARATIVE EVALUATION OF THE EFFICIENCY AND EFFECTIVENESS OF INTERNAL AND OUTSOURCED PUBLIC PROJECT MANAGEMENT IN KENYA: THE CASE OF THE URBAN DEVELOPMENT DEPARTMENT PROJECTS.

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A research project submitted to the University of Nairobi, Department of Real Estate, Construction Management and Quantity Surveying, in partial fulfillment for the award of degree in Master of Arts in Construction Management

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DECLARATION

Student's Declaration

I hereby declare that this research project is my original work and has not been presented for any award in any university.

Signature: ..... Date: 8/8/2023

Alphonce Okuku Otieno Odera

B50/7934/2006

Supervisor's Declaration

This research project has been submitted for examination with my approval as the university supervisor.

Signature: ..... Date: 9/8/2023

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DEDICATION

This work is dedicated to my life Partners Matilda and Daisy and my children Nigel, Apoda, Keziah, Jones and Gweth for the sacrifice of family time you made to enable me complete my studies.

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ABSTRACT

The aim of this study was to do a comparative evaluation of the efficiency of the internally managed and outsourced public project management in Kenya. Kenya is anticipated to be predominantly urban by 2030. This projected urbanization of the country should be predicated on an accurately delivered infrastructural development. While the country is struggling with abandoned projects most of which are solely initiated and internally managed by the government, a number of her peers (at independence) have managed to get provision of public services right through outsourced management and Public Private Partnerships thereby advancing to higher levels of economic development.

Because of this, the accomplishment of the goals serves as a gauge of the success of such projects. Economic and social facilities are the categories under which the public infrastructure projects fall. There is a widespread consensus that the state must take a crucial role in providing these services for a number of good reasons. The facilities and amenities are fundamental to the framework of society, which includes institutions like schools, hospitals, libraries, and prisons, as well as the support of daily economic activities, as in the case of public infrastructure like roads, rail, water provision, wastewater management, energy, agriculture, etc.

The research project used qualitative approaches to achieve its goals. The necessity to utilize this technique was influenced by the nature of data. The findings showed similar trends in efficiency and effectiveness for both internally managed infrastructural projects and outsourced projects. However, these variations were quantitatively higher for the internally managed projects. Internally managed infrastructural projects took a longer duration against schedule to completion compared to those whose management was outsourced. Similarly, internally managed projects experienced higher cost overruns. Poor definition of scope and goals for the project, lack of or inadequate planning, lack of well-defined deliverables, poor change management and poor project communication were cited as the main reasons for project time and cost overruns. The study recommended that creating awareness on project definition and goals, planning to define the project deliverables, effective change management and communication would improve on the effectiveness and efficiency for projects in Kenya.

Keywords: efficiency, effectiveness, internally, externally, outsourced managed project

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List of Abbreviations

AFD	French Development Agency
IMF	International Monetary Fund
ISO	International Standards Organization
JICA	Japan International Development Agency
KPMG	Klynveld Peat Marwick Goerdeler
MDGs	Millennium Development Goals
OPM3	Organizational Project Management Maturity Model
$(PM)^2$	Project Management Methodology
PMI	Project Management Institute
PPP	Private Public Partnerships
SPICE	Software Process Improvement and Capability Determination
SPSS	Statistical Package for Social Science

1.0 INTRODUCTION

1.1 Background of the study

Projects are created to carry out predetermined goals. How well the goals have been achieved serves as a gauge of how successful it has been (Takim & Adnan, 2008). Economic and social amenities are the two segments into which Yescombe (2007) divides public infrastructure projects. A fairly widespread consensus that the federal government must take a crucial role in providing these services for a number of good reasons. The facilities and amenities are fundamental to the framework of society, which includes institutions like hospitals, schools, libraries, and prisons, as well as the encouragement of daily financial transactions, as in the instance of modes of transport and infrastructure like roads, water, waste water, electric power, etc. Whilst provision of these investment goods is predominantly a preserve and an obligation of the government and or its related agencies, the provision should endeavor to produce results that are satisfactory to the requesting party, the citizens.

The concepts of efficiency and effectiveness of the project itself are crucial to assessing the achievement of a project's objectives. As opposed to efficacy, which focuses on meeting the project's aims or objectives, efficiency maximises output for a given level of input (Atkinson, 1999). Project effectiveness (or "doing the thing right") relates to cost and process management, which includes the successful transformation of inputs to outcomes within budgets and on time as well as the prudent use of human, monetary, and natural capital (Takim & Adnan, 2008). The advancement of the value or acceptability of the project chosen as a goal, on the opposite hand, corresponds with the efficacy of the project ("doing the right thing").

Achieving these parameters in the provision, delivery and operation of public infrastructure has not been satisfactory in Kenya, particularly in cases where the project is purely managed internally by the government or its related agencies (Talukhaba, 1999). This is a common phenomenon despite usage of huge resources from public coffers, at a time when the country is not only behind in meeting Millennium Development Goals (MDGs) but also struggling to meet its Vision 2030 programs.

The top priority for project's goals are satisfying project schedule, budget, technical requirements, and mission. Whereas it is important to deliver public utilities within a specific time and at a

reasonable public sector budget; projects that are solely undertaken and managed in-house by the respective departments or agencies of Kenyan Government have exhibited delays and are sometimes abandoned, while those outsourced and managed externally show considerable success (Talukhaba, 1999). Beyene (2014) claims that the growing constantly discrepancy between the governmental sector's ability to produce or handle assets and the general public's need for more amenities has compelled administrations to look for new delivery strategies. Especially in the sharing of risks duties by leveraging the innovation and efficacy of the private sector, outsourcing management of projects and Private Public Partnerships (PPP) are becoming more and more recognized as cost-effective and successful public project implementation approaches.

1.1 Statement of the problem

Kenya is anticipated to be predominantly urban by 2030. This projected urbanization of the country should be predicated on an accurately delivered infrastructural development. While the country is struggling with abandoned projects most of which are solely initiated and internally managed by the government, a number of her peers (at independence) have managed to get provision of public services right through outsourced management and Public Private Partnerships thereby advancing to higher levels of economic development. A case in point is the shared history of Kenya and Singapore: both countries were declared independent from Britain in 1963 at the same level of economic development (Kiteme, 2014). However, Satankar & Jain (2015), noted that, that is as far as the similarities of the two countries can go; today, there is a gaping economic difference between the two countries.

The construction industry continually faces the challenge of delivering products and services that demonstrate value (Akintoye, 2007). Large projects are invariably poorly understood and often inadequately managed (Morris P & G.H., 1993).If all parties involved receive satisfaction for their money, the endeavour is said to be profitable. This indicates that the project is eventually accomplished within the allotted time, projected price, and quality anticipated at the planning stage. According to Tabish & Jha (2011), adherence to the project schedule and cost targets is at the very least necessary for the accomplishment of the building endeavour and the delivery of a quality product. Failure to achieve these objectives results in various negative effects on a project. The impact would manifest vividly when projects are delayed, continuously and unethically extended or accelerated at additional cost. Projects of this kind literally have no end dates against

the demands of professional ethics and standards of best practice. This is a common trend in Kenya's public works.

The concern is that there is poor delivery of internally managed projects in comparison to externally managed projects. The bias towards outsourced project management in the execution of projects is based on the premise that the business community is open to new creative ideas, exhibits efficiency, produces optimally and in a cost effective manner and is therefore better at supplying and managing the economy (Hearne, 2009) and the delivery of essential services than the governmental sector at doing so. Whilst the country practices a mix of in house and outsourced project management strategy with that of purely internally managed government project sponsored and delivered system; the common belief is that a good number of government construction projects that are internally managed often stand unfinished, experience delays and cost overruns as compared to those whose management has been outsourced. Outsourcing Project Management as a public project delivery strategy has been well applied in many first world nations in Europe, Asia, America and Australia (Cheung, et al., 2012).

One of the Kenyan Government agencies entrusted with delivery of public utilities is the Urban Development Department. The agency is mandated to plan, monitor and ensure successful delivery of infrastructural development and accelerate the realization of Vision 2030. To this effect, a number of projects have been successfully delivered through the agency, either solely by the Kenyan government or in collaboration with other development partners like World Bank, IMF, AFD and JICA. Most of the projects done in conjunction with these funding agencies require engagement of external managers, right from inception to completion. However, a number of projects have also failed in meeting either or both efficiency and or effective tests of project management, especially those undertaken and managed internally managed.

It is crucial to consider the success and advantages of outsourced projects management for countries that are slow at adopting it. The reluctance in complete recognition of the successes of outsourced management has led to many crucial projects failing to be managed in time leading to cost and time overruns and at times complete abandonment of crucial projects. There are also instances that the unfinished government projects will often remain so at the behest of a few interested parties; completely oblivious of the project schedule or its budgeted cost. The result is projects that are in the end delivered beyond schedule and out of budget (Kiteme, 2014). In the process, a lot of project objectives including meeting the demand or need for the project and project financing goals are rarely achieved. Due to improper allocation of scarce resources,

particularly money, incomplete projects become unviable as a result of missed chances brought on by shifting market conditions. In addition, the damage to society and the parties' reputations caused by the concerned projects is enormous. (Talukhaba, 1999).

This study seeks to close this gap and lead to the skill base of the success levels of outsourced project management in developing countries. The knowledge on the importance of project schedule and budget costs is particularly important at this moment when the government continuously labors to deliver projects that are beyond schedule and have overshot their budgeted costs

1.2 Study Objectives

The overall purpose of this project is to undertake a comparative evaluation of the efficiency of the internally managed and outsourced public project management in Kenya. The specific objectives are:

1. To analyse public infrastructural projects' schedule/ time for internally managed and outsourced project management in Kenya;
2. To examine public infrastructural projects' budget/ cost for internally managed and outsourced project management in Kenya;
3. To identify causes of public infrastructural projects time overruns in internally managed and outsourced project management in Kenya;
4. To identify causes of public infrastructural projects cost overruns in internally managed and outsourced project management in Kenya; and
5. To identify appropriate interventions for efficient delivery of public projects.

1.3 Research questions

1. How does public projects' scheduled time vis a vis actual completion time for the internally managed projects compare with those whose management is outsourced in Kenya?
2. How do the public infrastructural projects budget (initial contract) cost vis a vis actual (final) cost for the internally managed projects compare with those whose management is outsourced in Kenya?
3. What factors determine the variations in time performance between internally managed public infrastructure projects and those whose project management is outsourced in Kenya?

4. What factors determine the variation in cost performance between internally managed public infrastructure projects and those whose project management is outsourced in Kenya?
5. What would be the appropriate interventions for efficient delivery of public projects?

1.4 Research hypothesis

The study hypothesizes the following:

1. That there is no difference in completion time variation between internally managed public infrastructure projects and those whose management is outsourced
2. That there is no difference in cost variation between internally managed public infrastructure projects and those whose management is outsourced

1.5 Justification of the study

The significance of public infrastructural projects cannot be overstated. Provision of these services form the backbone of a successful economy. Thus, the delivery of these services should be on point and not guesswork. The situation in Kenya's public project management exhibits confusion as to what strategy best fits efficient project delivery, while developing countries that have embraced public–private partnerships have shown considerable steps in economic development.

There has been no in-depth and an informed comparison of the success levels of infrastructural construction works delivered internally by the government viz a viz those undertaken through outsourced management. This lack of information may be leading to little regard to the success levels of outsourcing public project management, and its lack of recognition as an efficient and effective infrastructural work and service delivery strategy. This study shall help in informing full recognition of outsourced public project management and advocate for withdrawal of purely in house project management by government agencies in infrastructure development or enhanced involvement and use of outsourcing in infrastructure delivery. Specifically, the knowledge on project schedule and budget costs is particularly important at this moment when the government continuously labours to deliver projects that go beyond schedule and overshoot budget.

The wide variety of net benefits of outsourcing has attracted increasing interest for knowledge in this area from policy makers, researchers and industry practitioners (Cheung, et al., 2012). These advantages include improved administrative capability, innovations in the delivery of

governmental goods and services, decreases in the execution of projects costs and timelines, and the transfer of significant risk to the entrepreneurial community. Overall, these advantages ensure taxpayers get value for their money. PPPs have enhanced excellent service in addition to enhanced productivity in operations by utilising the understanding, abilities, and assets of private businesses.

1.6 Scope of the study

This study investigates the efficiency of public projects under the Urban Development Department initiatives. It compares the budget and actual project costs as well as scheduled and actual time for both internally managed and outsourced project management within the department. The agency is mandated to plan, monitor and ensure successful delivery of infrastructural development and accelerate the realization of Vision 20130. It has hitherto undertaken a number of projects around the country either as a representative of the government or an overseer of collaborations with development partners and the private sector. These projects somehow reveal varied success stories depending on their respective managers.

The efficient functioning and productivity of the project's administration mechanisms are also critical to its success. The realization of this broader definition of accomplishment depends on measures of effectiveness, which are defined as strong administration and domestic organizational structures (adherence to timetables and budget, and basic performance expectations). In light of this study's findings, it is possible to accomplish the efficacy of project administration measures, which refer to the accomplishment of project goals, user happiness, and programme use, by effectively addressing efficacy measurements. The study therefore limits itself to efficiency measures of project success.

1.7 Organization of the Study

There are five chapters in the research report. For the studies, Chapter 1 serves as an introduction. It analyses the study's history, issue declaration, goals, inquiries, and hypotheses, as well as the justifications and investigation's scope.

The second chapter examines a critical analysis of pertinent literary works. By addressing the understanding gaps in the previous research works, it seeks to present the study's theoretical framework. It begins by reviews on the in house and outsourced public project management strategies before an overview of the concept of a successful project. It then takes a theoretical and empirical review approach on the area of study, which is the efficiency measure of project

management in respect to both in house and outsourced public project management. The chapter concludes with the creation of a conceptual framework for the investigation, a review of the previous research, and the determination of the knowledge gap.

In the study's findings methods part of chapter three, the historical context of the study, the case study, the target audience, and the participant group is explained. It generally discusses the research design, including but not limited to sampling criteria and research instruments.

Chapter four is the data presentation and analysis section. Data collected are organized, analyzed and presented in various forms in this chapter. An overlook of the outcome given and the problems encountered in the field are also discussed.

Chapter five gives conclusions and recommendations made based on the results and findings. The chapter proposes other areas, surrounding the research area, for further study as well.

2.0 CHAPTER TWO: LITRATURE REVIEW

2.1 Introduction

In this chapter, a review of relevant literature is presented to provide a knowledgeable basis for the study and present an overview of models that explain efficiency measures of a construction project. This chapter is therefore organized in terms of theoretical and empirical reviews, the conceptual framework and the study's research gap.

2.2 The Successful Project

A project is an endeavour started with the goal of delivering the outcomes the individual making the request anticipates (Oberlender, 2000). It has a clear beginning and end and must accomplish a number of predetermined goals in order to be successful. An essential component of handling projects is ensuring that the owner is satisfied with the project's overall quality. Nevertheless, numerous endeavours start out with excellent intentions, significant resources, and heroic efforts (Takim & Adnan, 2008) but end up failing. The conclusion and happiness with the project are two major factors that influence the project's achievement from a macro perspective (Atkinson, 1999). Completion of a projects mirrors efficiency which relates to things undertaken during project delivery to achieve success. Satisfaction on the other hand indicates effectiveness of a project, which relates to how people perceive the eventual project.

Definition of project success are diverse. Because different stakeholders have different perspectives on the subject, Khosravi & Afshari (2011) note discrepancies among scholars over what constitutes the accomplishment of a project and how it should be measured. After an assortment of reviews, Babu & Sudhaka (2015) add to the conversation by describing the achievement of project objectives as fulfilling stakeholders' expectations and accomplishing the project's stated goals, contingent on the the project's respondents, scope of services, size, owner competence with regard to facility design, technological advances consequences, and a the quantity of other factors. Most academics would agree with this description; nevertheless, Al-Tmeemy, et al. (2010) excellently split the project's accomplishment into two separate elements by comparing project performance to effectiveness and productivity of the project.

2.2.1 Efficiency and Effectiveness of a Project

Efficacy and efficiency are frequently used in the administration of projects, but they are infrequently defined. Other scholars have used the concepts to describe the delivery of projects capabilities (Lampel, 2010). Some studies have utilized it to describe how to enhance specific aspects of managing projects (Ward, 2009). Several maturity frameworks, including OPM3 (PMI, 2008), SPICE (Sarshar, Haigh & Amaratunga, 2004), and (PM) 2 (Kwak & Ibbs, 2012), have mentioned efficiency as a crucial metric for gauging maturity. Even yet, the definition of efficacy has not been entirely apparent. Efficacy and productivity are two application concepts that have been established in the discipline of PM and are used indiscriminately. According to DeToro and McCabe (2010), whereas effectiveness is defined as satisfying the demands or expectations of the client, efficiency is characterized as achieving all internal specifications for cost, margins, and asset utilization. Such definitions are key ones to focus on various parts of a business.

Hearne (2009), observed that such definitions highlight the various parts of quality management, in which customer satisfaction is important. This is common when looking at different definitions of quality. For instance, Rose (2005) states that the definitions of quality indicate varied perspectives. He continues to argue that quality defines product features which meet the needs of a customer. Other definitions such as Juran (1989) state that quality is freedom out of deficiencies. From the definitions, it is clear that quality can be looked at from various angles. For Rose (2005), the definition indicates the need to meet customer needs and expectations while for Juran (1989), the focus is on the product itself. However, despite having distinct techniques, such as how different projects approach achieving the same goal, both viewpoints might refer to the same thing, the final conclusion. Based on the ISO 9000: 2005, quality is the level in which sets of inherent characteristics meet the requirements (ISO, 2005).

According to Rose (2005), the three aforementioned categories emphasize products, their defects, and customers as well as which are still used for assessing a project's efficacy and effectiveness in terms of achieving its expenses, profit margins, asset utilization, and client requirements. DeToro and McCabe (2010) claim that the shared characteristics between the concepts of efficacy and productivity are obvious. According to standards of quality, a good's characteristics must be in line with the desired characteristics of the client. The priority is to ensure that a customer is provided with the best output in a project and ensuring that the output is what the customer requires. This is similar standing for efficiency and effectiveness of project

management provided early on. This means that the notions take into account internally as well as externally, short-term and long-term viewpoints. Performance, on the other hand, concentrates on long-term problems that are both internal and external while productiveness addresses internal or short-term concerns.

Given this argument, it may be significant that the project outputs (efficiency) and project outcomes (effectiveness) are what determines whether internal or externally managed projects succeed, leading to the modification of the "traditional iron triangle" to the "project golden triangle," as shown in the following figure. Therefore, the project success criteria, whether internally or externally managed, must take into account the multiple dimensions limitation criteria, which includes not merely the triple but also the project administration hexagon with its six limitations, including dimension, standard, risk, client fulfilment, time and energy, and expenses in a passing manner.

The achievement of the building endeavor also necessitates meeting a number of other performance criteria, such as avoiding disagreements and adhering to safety standards, according to Tabish & Jha (2011), who support the endeavor's golden triangles. In actuality, those customers or customers for whom a project is meant may not be pleased even when it gets completed on schedule, under budget, and meets performance expectations (Takim & Adnan, 2008). Additionally, each investor who invests in a building endeavour makes a financial commitment within a set timeframe with the expectation that their investment will pay off and meet the needs of the client. The absence of comprehension of scope, time, cost, and quality contributes to failure initiatives. (Vasista, 2017).

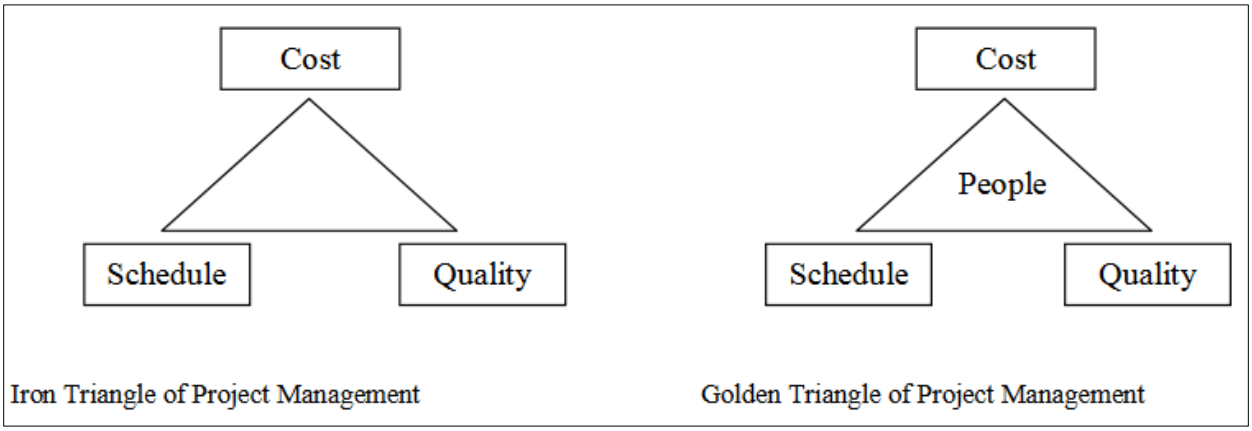

Figure 1: Project Iron and Golden Triangles

The iron triangle emphasizes efficiency of a project management, which addresses the relationship between cost, schedule and quality (output) in the delivery of successful project. The golden triangle includes effectiveness of project management by not only emphasizing the relationships among cost, schedule, quality but placing people (the result) at the center of the iron triangle because it is people that ties the other elements together (Babu & Sudhaka, 2015). Considering the objectives of this study, the researcher limits the scope of the study to the efficiency of project management. The wider definition of success, which includes efficacy, also refers to good administration and an internal organizational structure (which is adherence to schedule and budget as well as basic performance objectives). In light of this study's findings, it follows that resolving performance measurements in a satisfactory manner can lead to the attainment of performance measurements, which refer to the accomplishment of the project's goals, customer happiness, and project utilization.

2.2.2 The Project Lifecycle

Large-scale project development is always complex and dynamic, with many beginning with excellent concepts, substantial financial commitments, and valiant efforts that, regrettably, did not always provide the desired results (Vasista, 2017). It might be challenging to identify the exact starting and conclusion dates of some initiatives since they develop over time and fade away slowly, respectively. Nevertheless, numerous initiatives also include one or more important dates that can be recognised as crucial events or benchmarks in between their official commencement and conclusion dates.

The term "project life" typically refers to the time frame encompassing the start and finish of a project. The moment Design, and Development are the three main stages of the construction project (Hammadi & Nawab, 2016). The beginning of the project is often the initial step, during which the project is chosen and a feasibility study is conducted to determine its viability and create a company case. The next stage is the preparation of the project, where resources and funds are allotted and designing the project will be carried out. The third stage of a project is project execution, which entails putting designs into practise within the constraints of resources allotted, time constraints, and standards for assurance and specifications.

However, according to Lock (2007), a project lasts until its conclusion reaches the end of its useful monetary value and is discarded or eliminated of, which is outside of what is typically thought of as the most active or fulfilment part of the undertaking life. Lock (2007) proposes a five-year Gantt

chart showing an ordered list of operations that are generally relevant to capital initiatives that incorporate many different parties and serve the public's cycle, despite the fact that construction endeavours differ so greatly from one another that there is nowhere to be found as an average life history patterns.

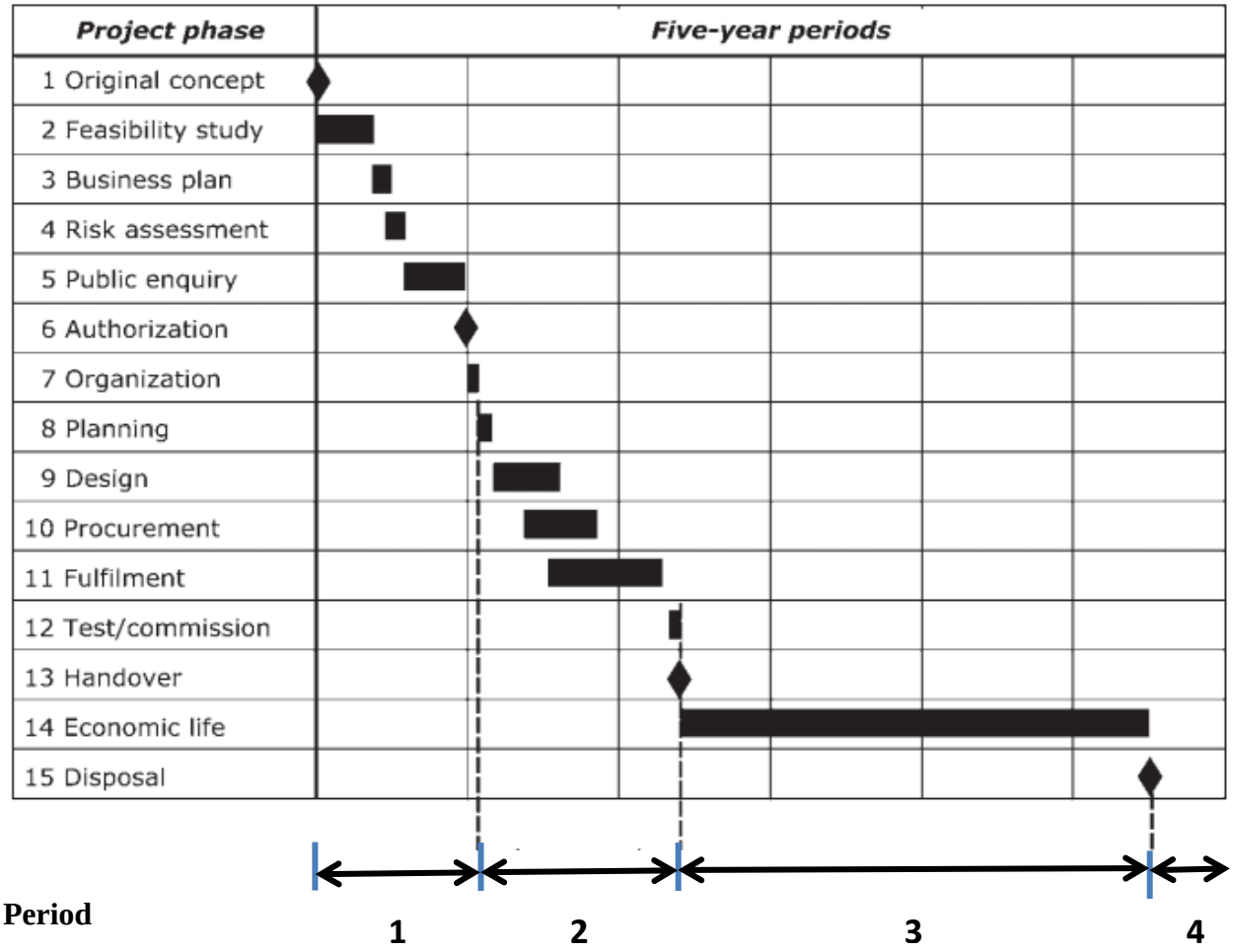

Chart 1: Sequence of Project Activities

This Chart shows the phases a project undergoes in its lifetime. This study is concerned with the first two phases shown on the Chart above.

2.2.2.1 Period 1- Project Definition

As a result, every project starts with a formative phase during which a concept recognizes the need for a project and develops a first idea that supports future research. The results of the inquiry include recommendations and a business plan that outline the project, its monetary specifications, desired benefits, and major checkpoints. These earliest stages of a project make up the basic scope of the project when combined. Furthermore, public inquiries and protracted requests for planning may be required for projects that are visible to the public or that could have a large negative impact

on society or the natural environment (Lock, 2007). These processes can significantly delay or even block the start of the construction process.

The business case is the first step in the project defining process and is what will ultimately determine whether or not the project can begin. The fundamentals for the project's success or failure are set at this point in its life cycle. The project definition stage sets the stage for the endeavor's eventual accomplishment or failure through its evaluation, strategy, and go/no-go choices. The inability is nearly a given if the undertaking is poorly or improperly conceived, or if the strategy and risk assessment are flawed.

The undertaking can be authorised if everybody has concurred on the endeavor's definition, the rights have been given, and the money are accessible. However, some organisations are very watchful concerning the authorization procedure and can take weeks to agree to discharge the money and other resources needed for the project to start. The permission ought to be nearly an immediately apparent event or achievement rather than an exhausting period. After the undertaking has been approved, the project's structure must be established. The hiring of a project supervisor and the reserving or the inclusion of office space and other accommodations are all considered to be a part of the programme start-up phase. The individual in charge of the project must then arrange for complete preparation and the mobilisation of the staff before the project can begin to actually move forward.

2.2.2.2 Period 2- Project Fulfillment or Execution

The next stage includes the contiguous phases of design, purchasing, and manufactured or building. It happens by an amalgamation of numerous intentional and spontaneous occurrences and interactions with shifting participants, processes, and environments (Satankar & Jain, 2015). The layout, procurement, and construction of each asset through a prototype-making process due to the various site and geographic circumstances, construction techniques, supplies, and substances, as well as the organisation and administration of a team working on the project (ACIF & APCC, 2015). The very concept of projects varies greatly, and multiple businesses or contractors work on each one for the same client. As a result, the delivery of a prototype is a dynamic process that calls for collaboration among the project team members to continuously adapt and fine-tune the specific project requirements, designs, and construction methods, as well as the project's sequencing, resources, and logistics.

The project is complete when it is delivered to the client for functional use, however this typically cannot happen before the contractor has completed installation, tests, or trials to confirm that the project will be suitable for the purpose it was designed for. In addition, project closure entails delivering the finished product to the client, providing the as-built drawings, providing the operation and maintenance plan, terminating the contracts, and notifying all parties involved of the project's completion. If the project's end date is frozen, hurried work execution may occur towards the end with undesirable results. If all aspects of the project are not clearly understood, errors in execution may occur and time overruns experienced while undertaking corrective measures. The implications could lead to arbitration, lawsuits and conflicts, or even the complete abandoning of the construction endeavour. The undertaking falls apart when an extension cannot be tolerated by the client any longer.

2.2.3 Project Management Systems

The government's the building industry creates infrastructure that are essential in making people's wants and ambitions a reality. It develops initiatives and facilities that support the service sector, providing chances for economic growth and job creation. There is some amount of expectations for public entities to provide fundamental services (Geroniks & Lejnieks, 2015). According to Babu & Sudhaka (2015), a project is a multifaceted, unique, one-time undertaking constrained by time, money, and resources as well as performance criteria created to satisfy client needs. One of the key elements which decides the success of an endeavour and one that significantly affects the project's final outcomes is the execution technique (Hosseini et al., 2015).

A project delivery strategy encompasses planning, funding, organising, building, operating, and maintaining tasks that make it easier to supply a good or service. As a result, it involves a type of contract used to transfer or share the risks associated with an undertaking or the team's organisational structure. In order to achieve good results, it therefore coordinates management responsibilities including planning, organising, and controlling project execution activities. (Babu & Sudhaka, 2015).The explanation has a direct connection to project administration, which is defined by Vasista (2017) as the use of a variety of tools and strategies to organise the utilisation of various resources towards the achievement of a special, difficult, one-time work while keeping costs, deadlines, and quality standards in mind. Each task calls for a specific combination of these

instruments and methods, organised to meet the task surroundings and life cycle (from inception to completion).

In the definition are included some project success criteria, The Iron Triangle (Atkinson, 1999). The project management or delivery strategy should be on point. Unfortunately, this has been a major problem in many countries, Kenya included. Many research investigations have discovered cost and time overruns as the main issues. The plan of action or method of delivery is at the heart of this delivery issue. The methods used to implement this strategy can range from global aid programmes, grants, and public-private partnerships, as well as additional funding from mutually beneficial funds (Geroniks & Lejnieks, 2015). The colour spectrum includes situations in which the owner actively participates in all phases of the project, from the initial layout to establishing and activities, to situations in which the proprietor has little involvement and relies on a turnkey contractor to manage each component of the task, which includes future operation and upkeep.

According to KPMG International (2010) all of the main delivery sources can be either Traditional, Integrative, Collaborative or Partnership. The report describes the traditional model as a fairly rigid and sequential, which can be related to governments' involvement in the provision of infrastructural services. Although the integrative framework incorporates all three parties to a building endeavour, who frequently work together under a single contract to distribute risks associated with the project, the collaborative model permits certain overlapping in the constructing procedure. The collaboration approach, primarily utilised in the government sector, entails collaboration between the public and commercial sectors across a number of centuries and integrates life cycle, regular consumption, and operational challenges into a comprehensive framework. (KPMGInternational, 2010).

For purposes of this study these project management systems, specifically in regard to public projects, have been described as internal or outsourced as described hereinafter.

2.2.3.1 Internal Public Project Management

Concomitant to KPMG International (2010), public project delivery strategy in Kenya can be described as largely traditional and internal oriented, more so in the form of 'design-bid-build'. Development, financing, and frequently management of substantial expenditure projects have historically been the responsibility of the federal government (Priemus et al., 2008). In this instance, the responsible public agency specifies and designs the facility, invites bids based on this

precise design, and finances development. The organisation is responsible for covering all construction related expenses, including any cost overruns. The service provider assumes no liability for the continued execution of the agreement once the (very brief) construction-warranty window has passed because the public agency is completely responsible for operating and maintaining the facility. (Yescombe, 2007).

Specifically, the Kenyan government through its various central or local agencies has been an active participant in all the stages of the project from initial design phase through commissioning and operationalization. Given that the government is unquestionably the provider of public services, administrator of the operation of public organisations, and funder of development initiatives using funds from public sources, such as taxes and levy, this is logically reasonable (Beyene, 2014). This traditional method of project delivery makes the assumption that the implementing agency has thoroughly and precisely defined the scope of work and that competent contractors will be hired to execute the works. These projects are often executed as fixed price contracts, and the provider of services receives installment payments depending on the achievement of certain milestones. Whatever the nation's location on the map or economic state, there is an appropriate amount of anticipation in contemporary culture for the delivery of basic services by government agencies. These services generally include basic social services, medical emergencies, security services, and the establishment and maintenance of public service facilities. (Geroniks & Lejnieks, 2015). Therefore, the government prioritizes investments in infrastructure projects either centrally or through its agencies in order that services may reach the people (Kimemia, 2015).

Hearne (2009) traces state interventionist approach to provision of services to the end of World War II. Prior to that, the supply of publicly funded commodities was more characterized by a laissez-faire mindset, in which the preparation and distribution of societal requirements, such as crucial infrastructure and government services, were performed as long as doing so was beneficial for wealthy individuals. The Keynesian-style programmes that supported the idea that human society and economics should be structured in accordance with the choices that of the "hidden hand" of the marketplace, on the opposite end of the spectrum, were the ones that encouraged the post-World War II approach. It promoted higher government spending and reduced taxation as a way to boost desire and rescue the world economy from the Great Recession. In order to create a welfare nation, which between other things stipulated essential public infrastructure as well as services, Keynesian authorities removed the accountability of important areas of socioeconomic

life from the marketplace and increased the state's role at both the local as well as the central levels (Whitfield, 2006).

Nevertheless, Talukhaba (1999) found that the public building industry has not kept up with improvements in project delivery. Cost and time overruns occur often within the government construction space (MBATHA, 1986). This is particularly so in many cases particularly when the design is lacking or contains too many errors and inconsistencies. It gets more challenging for the builder to oversee the building stages if the project owner, in this case the state, is unsure of its project requirements and makes many alterations during construction thus significantly changing the scope. In these circumstances, the contractors frequently demand change orders and assert their right to higher compensation (KPMG International, 2010). The goals of numerous stakeholders are not always met by the government's investment projects, which are frequently delivered too late, at a greater cost, and do not satisfy agreed-upon quality requirements. Additionally, these projects may not have the desired outcome (Klakegg et al., 2007). In the worst case scenario, the parties turn hostile towards one another, which could result in legal action or cost hikes for both the government and the contractor, wasting public funds.

2.2.3.2 Outsourced Public Project Management

Governments have been obliged to explore new project delivery techniques as a result of the growing gap between the public sector's ability to mobilize funds and the public's desire for additional amenities (Ribeiro, 1998). Experiences has proven that outsourcing methods for delivering social and infrastructural services allow governments to take use of private sector efficiency and investments to enhance services to the public (Kim, et al., 2011). In fact, over the past ten or so years, private sector financing through outsourcing has gained popularity as a means of purchasing and operating public-sector facilities in sectors such as transportation (roads, bridges, tunnels, transportation systems, ports, airfields), social institutions (hospitals, educational institutions, jails, social accommodation), governmental utilities (water supply, water treatment for waste, waste disposal), government agencies and other accommodations, as well as in the speculative industry. (Yescombe, 2007).

Geroniks & Lejnieks (2015) note that the various outsourced services methods, such as Public Private Partnership (PPP), have their roots in the state-owned service industry privatization in the Thatcher-era United Kingdom, as a way to ensure a quicker delivery of services and amenities that were available to the public at the time needed, from the standpoint of constrained budgetary policy and the lack about sufficient funding for carrying out such endeavours on behalf of the public sector. Yescombe (2007) defines PPPs as a long-term agreement across a public sector party and a company from the private sector in which the private sector is mandated to design, finance, build, and operate an infrastructure for everyone (the "facility"). The private sector party is compensated over the course of the PPP Arrangement for the use of the facility, either by the government's party or by the general population as facility users. Authorities view PPPs as a way to launch expenditure programmes that would not be feasible in a fair amount of time within the current public-sector budget (Alinaitwe & Ayesiga, 2013). PPPs are thus risk-sharing approaches to investment in the supply of public goods and services. It is a joint venture among the public and business communities, based on the experience of each partner, which is most satisfies the demands of the general public by distributing resources, taking on risks, and reaping returns in an acceptable manner.

The "outputs" are the public services that the facility is meant to offer, but they do not describe how they are to be delivered (Yescombe, 2007). The Public Authority would specify its requirements in terms of "outputs" to meet these needs. After that, it is up to the private sector to plan, fund, construct, and run the facility in order to achieve these permanent output requirements. In order to pay back the funding expenses and provide an income to shareholders, the private sector organization receives payments (known as "Service Fees") on a pre-agreed basis for the course of the PPP Contract (perhaps 25 years on average). There are usually no additional allowances for price extensions that happen during building or facilities administration. Customer

service fees are subject to reductions for failing to fulfil output standards. The entity in charge of completing the project is typically also in charge of its full or partial funding and, most importantly, is in charge of ensuring that the infrastructure continues to be of a high standard over the long term (KPMG International, 2010).This PPP approach has the effect of transferring significant risks from the local government to the Private Entity with regard to the costs of the planning and building of the establishment, consumer appetite for the facility (usage), or service delivered by the establishment (including being accessible for use), and its costs of operation and upkeep. Thus, an incentive or rating structure that may be based on user fees or flat payments deducted for poor outcomes encourages the commercial organization to complete the project on time and within budget.

2.3 Theoretical Review

The study limits itself to efficiency measures of project success, which include cost and time. It also uses the variations in the quantity of work done at a particular stage as a proxy for success of a construction project. By variations, the study examines a project's planned deliverables against the actual results at a point in time. In all the cases, the study assumes that quality is a minimum achievable standard for all works and that in cases where quality is not above board, the work shall be repeated hence manifests itself in project delays and cost overruns.

Different researchers have investigated varied determinants of a project's success. Indeed, studies concur that the output as measured by scope (quantity) of construction work undertaken at a given point in time should correspond with its scheduled time and cost at that point of evaluation. Atkinson (1999) views the cost, time, and quality criteria as ad hoc metrics for measuring efficiency throughout the delivery stage. Dweiri (2006) echoed Atkinson's viewpoint and used the fundamental standards as an internal gauge of project management effectiveness. Since effort to marketplace is crucial, Shenhar et al. (2001) assessed the criteria of cost, time, and quality as an

assessment of success in the near term. Measurements of projects' delivery stages' costs, timelines, and quality show whether they are on track (Atkinson, 1999). Time and money becoming secondary considerations, with the final product, or scope, taking precedence. The completion of system delivery is typically considered to be the point at which a project is considered to have ended.

2.3.1 Scope

The project's lifespan begins with the conception of the initial idea, and the project's duration and definitions regarding quality don't end until the last piece of documentation has been submitted. filed describing the convey in its completed or "as-built" scenario (Lock, 2007). Since project success metrics are typically focused on time, money, and quality, also known as the "iron triangle," quality is thought to be a significant project outcome. It is scope that is associated with customer requirements (Rose, 2005). It can be linked to the output of a project which refers to the deliverables. It is described as the totality of work required to complete the project objectives (Vasista, 2017). It is important to complete project to a pre specified scope that denotes volume of work that meets stakeholders' expectations in terms of quality requisites as influenced by market conditions, which are subject to at least the shared criteria of the stakeholders. AAccording to CIF & APCC (2015), project sponsors may apply the following five-part criteria to determine whether a project has been successful after deciding to generate an asset.

i. It should be possible to exceed end users' expectations.
ii. It is important to achieve the strategic and financial goals of the project sponsors.
iii. Members of the project team should meet their financial goals.
iv. The delivery team should appreciate its collaboration and look forward to future endeavours.

v. The project should meet or exceed all stakeholder expectations for safety, design, environmental effects, and social goals.

In Kenyan Public Projects, literature indicates that majority of the projects rarely meet the objectives in project delivery. By observations in Kenyan Public Projects, the source of many problems is failure to properly define the project scope. Since the project scope outlines the work that must be done, it deserves to be given the first priority before timelines and budgets are drawn. After the scope has been defined, thence the budgets and schedule can be estimated as derivatives of scope. Project delivery processes that are in sync with the scope specifications will definitely ensure a successful product as cost and schedule constraints are addressed therein.

According to Wachira (2015), a balance between the scope, budget, and timeline is thus required in the Kenyan setting. There is a specific amount of work that must be completed for each project, as well as a cost and timeframe for doing the job. The quantity of requirements that make up the final product (the scope), as well as the amount of assets allotted to the programme (the cost), will directly affect how long it takes to generate the deliverable (Tomtsongas, 2011). Any expansion of the work's scope necessitates a comparable expansion of the budget and timeline. On the other hand, every reduction in the scope of the task has a proportional impact on the budget and timeline. A well defined and managed scope results in the delivery of high-quality projects to stakeholders within the allotted budgets and time frames.

2.3.2 Budgeted Cost/Actual Cost

Azha et al. (2008) asserts that cost is a key component in determining a project's success. This is due to the fact that cost is one of the key factors throughout the whole life cycle of a construction project, and it may be considered one of the most crucial characteristics and the key to project success. According to Oberlender (2000), the cost of a project is the sum of the resources that the

person who owns the project will incur to acquire it plus the income the design and construction firms will receive as payment for their labour. In the absence of a cost estimate, it would be hard to do a financial analysis or appraisal, create a company strategy, create precise budgets, oversee spending, determine the number of employees needed, or carry out a number of other management tasks (Lock, 2007). Project cost overruns are a problem for all stakeholders since they have a negative impact on profitability and strain connections between them. Therefore, managing expenses entails keeping an eye regarding performance by contrasting actual costs for the work to budgeted prices for the work that has been done so far. Whatever the magnitude or complexity of the undertaking, Memon & Rahman (2013) state that meeting the anticipated expense is the fundamental criterion for the success of any construction project.

Literature from developing nations demonstrates that cost overrun is a significant issue. These overruns in often refer to unexpected expenses that exceed the predicted amount as a result of underestimating the actual cost during budgeting, which is the excess of actual cost over budget. When compared, the ratio of the contract amount to the initial contract award amount can be expressed as a percentages. Because of inadequate the administration of resources, cost overruns are more common and can surpass 100% of the project's planned cost in Kenya (Vaardini, et al., 2016).

Based on observations made in industrialized nations, Kenyan public projects should make sure that cost performance is under control to ensure that construction costs are within the projected budget. According to Gayatri and Saurabh (2013), effective project delivery should include a general summary of budget adherence. Infact, in the developed countries, cost performance can be accurately forecast and therefore they can allocate resources confidently, exhibit reduced financial risks and thus reducing the cost of capital (CBP, 2005). Consequently, in the local setting, it should be understood that the most crucial success factors for cost conformity, which are based

on the effectiveness of the project's completion strategy, are: meticulous pretender investigation of the premises, thorough knowledge of the scope on the part of the project administrator and contractor, a high level of shared trust among the project's stakeholders, and no political or socioeconomic disruption. If the team in charge of managing the project and contractor have a clear understanding of the scope, it will be easier to produce outcomes at a lower cost. Furthermore, rigorous site study contributes to excellent planning, which in turn aids in defining the scope and creating an extensive knowledge beforehand. Understanding the financial implications and completing the project within budget are made possible by trust among project participants, which is a key component of project management.

2.3.3 Schedule time/Actual Time

Construction duration frequently serves as a benchmark for evaluating a project's effectiveness and the effectiveness of the project management team (Hammadi & Nawab, 2016). It's critical to understand the relationship between the time allocated and the time required whenever any task must be completed by a specific date or time deadline (Lock, 2007). Indeed, the timetable is the result of scope definition, budgeting, and planning and serves as the benchmark for all activities. According to Oberlender (2000), the prompt conclusion of a project determines its success, hence it is safe to assume that having some form of plan is always recommended if a project is to be completed on schedule. On the other hand, time overruns are a common occurrence, with actual project completion times frequently surpassing agreed-upon timelines. Additional days of work are a manifestation of time overwhelmed which is also described as an act or event that increases the amount of time needed to accomplish or finish the agreement's work.

Extensions occur for a variety of reasons, including designer modifications or mistakes, economic conditions, resource availability, and project party performance, all of which are related to project delivery strategy. What has positively driven project success in the developed countries has widely

been documented by Lock (2007). In his analysis, Lock (2007) makes the claim that projects in industrialized nations concentrate on a variety of elements, both inside and outside the project organization, which might have a significant impact on the project. The advantages that can be anticipated for the individual in charge of the project as well as everyone else involved in carrying out the project will be significantly influenced by the quality of the plans and schedules that are created. These variables are situations and occurrences that can disrupt or entirely stop work flow and even result in project postponement, thus they should be taken into account for initiatives that are professionally administered.

In accordance with this, scheduling is crucial because it combines project description, personnel, cost, and resource information with time and work execution methods to determine the project's logical sequence of operations (Oberlender, 2000). The most crucial success factors for schedule adherence, such as an adequate supply of assets according to plan during the construction phase, a promptly and valuable choices from the highest levels of management, a high level of trust shared by project participants, owners' needs that are thoroughly understood and established, and a lack of administrative interference, can be learned by Kenyan government initiatives. An effective project administration software guarantees prompt top-level decision-making, that not only assists to determine personnel accessible but also helps in fostering trust, preventing delays. It goes without saying that the owner's contribution in the creation of a precise project brief that truly reflects project needs is crucial and, to some extent, prevents bureaucracy meddling during implementation.

Generally, from the review of literature on scope, budget / cost and schedule / time, this study can offer recommendations to the Kenyan Public Projects to emphasize on effectively focusing on these factors in order to ensure project success. Alternatively, inability of the Kenyan Public

Projects is associated with lack of observation or planning in either one or all of the above-mentioned measures of project success.

2.4 Empirical Review

The literature on project processes has been widely discussed in (McConachy, 1996; Stevens, 1996; Vaardini et al., 2016). Stevens (1996) began the review of literature on the comprehensive approach to the assessment of project quality. He argued that the best practice in assessing project success should be based on quality evaluation. These include time, cost, and safety as well as more modern achievement indicators like customer happiness, employee engagement, collaboration, training, and responsiveness.

On the other hand, McConachy (1996) offered a dual approach of evaluating the effectiveness of projects using evaluations from a concept he called "conventional project quality" and "contemporary project excellence." "Contemporary project efficiency" is a qualitative evaluation of consumers and project staff members as to how the project complies with their expectations with regard to issues like: a shared understanding of goals and values; peer review; expectations from customers; and working together a project. Whereas "conventional project quality" deals with the degree to which the client's requirements have been fulfilled when it comes to the budget, schedule, and technical parameters, "contemporary convey efficiency" is subjective in nature. An equivalent process that evaluates "earned quality" as a technique for handling the build-up of acceptable standards in an undertaking during the planning and construction phases has been proposed by Paquin, Couillard, and Paquin (1996) for engineering or construction projects.

A review by Vaardini, et al. (2016) considers Cost overrun as one of the most important problems that encumber projects progress. The review concludes that trend of project cost overruns in

developing countries is more severe and that sometimes it exceeds 100% of the estimated cost of the project. The reason of this is due to poor management of the resources.

Several other works have discussed project schedule time in numerous manners (Yassine et al., 2003; Thite, 2010). The studies look at the causes of delay in construction projects in reference to time as a measure of project success and have proceeded to establish main causes of delay in several countries for various project types (Baguley, 2005; APM, 2005). Other studies have also discussed the delay analysis methods and the proposed ways to mitigate delay (Adams et al, 2005; Baker et al., 2008). All these examinations of project schedule time detail how crucial this variable as a measure of project success is to the overall realization of a construction project output.

In order to better understand project delays in developing nations during the development and building phases, Chalabi and Camp (1984) performed a review. Their research revealed that the very beginning of the project is where all delays and cost overruns occur in building projects. Noulmanee et al. (2000) investigated the reasons behind motorway construction holdups in Thailand and came to the conclusion that all parties participating in operations have the potential to cause delays. The primary causes of delays were determined to be inadequate suppliers, an organization lacking adequate resources, insufficient and confusing drawings, and shortcomings between consultants and contractors. The study added that dialogues that result for comprehending can help to reduce delay.

From the review of literature, a number of key points can be noted, which could be essential in the Kenyan Public Project context. Clearly, project efficiency relies on effective definition of project scope and goals, well defined deliverables, project planning, effective communication, tracking and reporting project progress, proper change management as well as risk management. These factors enable a project manager to avoid cost overrun, finish the project on time and within scope.

These recommendations would serve in the current context in which Kenya's internally managed projects lack efficiency and effectiveness unlike the externally managed projects.

2.5 Conceptual Framework

According to the above review of literature, a number of key findings have been drawn. It is clear that project efficiency relies on various factors as identified in the empirical review above. They are the key steps in the project delivery process that enables timely completion of projects, within scope and cost. In addition, what has been realized is that for the outsourced projects, they effectively follow the above mentioned factors putting into perspective the project cost, scope and time to ensure efficiency and effectiveness of their projects. This is unlike the internally managed projects that fail to adhere to the above project delivery process to influence the level of success of their projects. In order to ensure that the internally managed projects succeed, they should adhere to the above project delivery process to achieve timely and on budget project completion. Consequently, programmes should concentrate on clearly defining the project's objectives and scope, specifying the results to be achieved, planning the project, communicating effectively, monitoring the project's advancement, and using the right change administration and risk management strategies to complete the project on schedule, within budget, while maintaining the project's original scope. These would form the basis of the recommendations in this study in which there is variation in the internally managed projects and outsourced projects in terms of cost, time and scope.

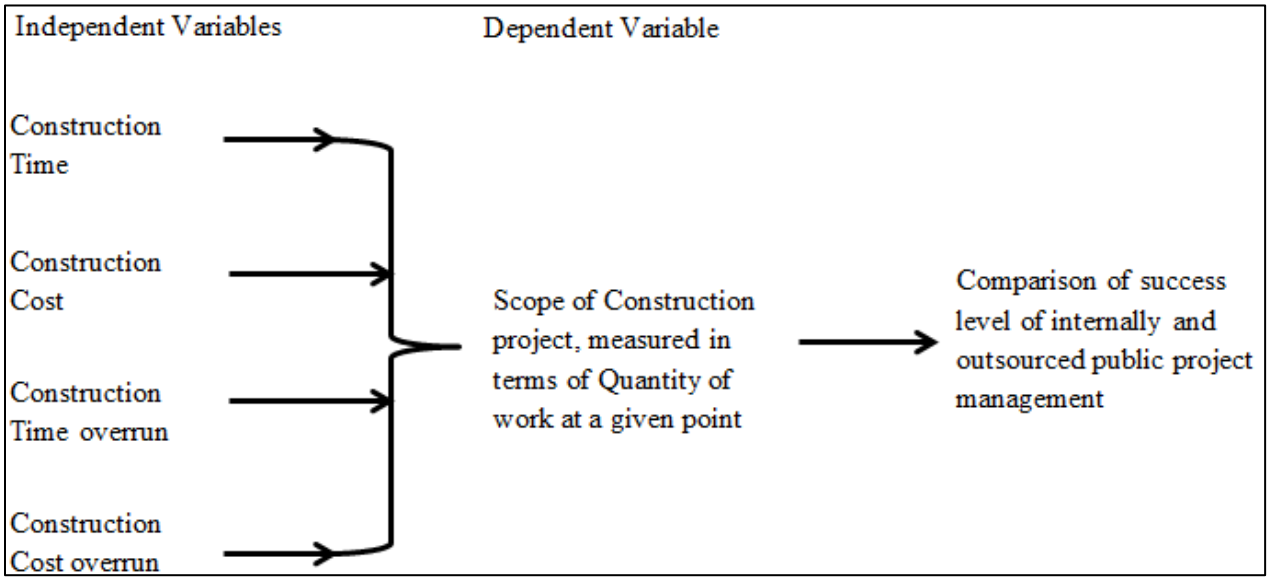

Figure 2: Conceptual framework of the study

2.6 Research Gap

Different researchers have established varied determinants of an efficient project, but this may be the first study that empirically evaluates the success level of internally and outsourced project management in Kenya. Specific interest is in the projects managed by a particular Kenyan Government Agency. The scarcity of these studies in Kenya simply mean that all interested parties in Kenya's Public Sector construction industry cannot get reference points for efficient project delivery. The study will inform the industry and hence enhance value for public moneys by informing the industry on efficient public project delivery approach. This study would therefore permit identification of the typical response of efficiency measures between the internally managed and outsourced management of public construction projects. Understanding these aspects has not been done in the country and unlocking the same is tremendously important given the significance of the provision of public infrastructure in the economy.

3.0 CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter outlines the chosen research methodology as well as the specifics of the study's methodology. Additionally, it describes the demographic, sampling strategies, data gathering and analysis procedures, and research design. Also given are methods for ensuring the authenticity and trustworthiness of research data.

3.2 Research plan and methodology

The accepted study approach was analytic cross sectional, and the data addressed the price and completion time for building projects, storm water drainage structures, and road and transportation projects undertaken by the Department of Urban Development between 2010 and 2018. The data is subjective in character because it was possible to get the necessary information through conversations with the project executives, advisors, and vendors.

The research design was both a desktop research and a case study. The desktop research helped to get information about the projects' schedule / time and the budget / cost for both the internally managed and outsourced project management. This information is available at the Department of Urban Development that was chosen as a case study. On the other hand, the case study research helped to identify and analyse on a case by case the public infrastructural projects in terms of time and cost overrun for the internally managed and outsourced projects in Kenya to understand their efficiency and effectiveness. These approaches helped develop detailed and intensive knowledge about efficiency and effectiveness of internally managed and outsourced project management in Kenya.

3.3 Research methodology

3.3.1 Target population

For the purpose of this study, the target population consisted of the project managers, project consultants / specialists and contractors involved in the internally managed and outsourced project management within the chosen department. Because of time and financial resources, considering that this was an academic exercise which was to be completed over a given period of time, this study limited itself to the projects done by the Urban Development Department, between 2010 and 2018, which were 55 projects in number. Out of this, a sample of seventeen (17) projects were

chosen out of convenience for both internally and outsourced projects. The list of the selected projects is provided in Appendix I

3.3.2 Sample and sampling procedure

The sample was drawn from a list of 55 projects executed in the department between 2010 and 2018 whether completed or unfinished. The choice of this sample period was due to the availability of recent data and hence conveniently selected for the project. The list of all the projects selected is provided in Appendix I.

In addition seventeen (17) project consultants was chosen to provide answers to some of the roots of cost and time projects overruns. The consultants have previously been involved in managing the selected projects, some of the consultants, have been involved in more than one project.

The analysis of the study methodology is as provided in Table 1.

Table 1: Summary of the study methodology

C	Research objective	Data Needed	Data Source	Collection methods	Data Output
1.	To analyze public infrastructural projects' schedule/ time for the internally managed and outsourced project management in Kenya.	Provide details of project schedule and time for both internally managed and outsourced projects	Project file Project Manager	Literature review, Desktop research (contract documents, monthly, annual and completion reports, claim documents)	Drawing on key themes
2.	To examine public infrastructural projects' budget/ cost for the internally managed and outsourced project management in Kenya.	Provide details of project budget and cost for both internally managed and outsourced projects	Project file Project Manager	Literature review, Desktop research (contract documents, monthly, annual and completion reports, claim documents)	Drawing on key themes

3.	To identify causes of public infrastructural projects time overruns in internally managed and outsourced project management in Kenya.	Identify the causes of infrastructural project time overrun for the internally managed and outsourced projects in Kenya	Project file Project Manager Contractors	Literature review, Desktop research (contract documents, monthly, annual and completion reports, claim documents)	Descriptive using mean item score
4.	To identify causes of public infrastructural projects cost overruns in internally managed and outsourced project management in Kenya.	Identify the causes of infrastructural project cost overrun for the internally managed and outsourced projects in Kenya	Project file Project Manager Contractors	Literature review, Desktop research (contract documents, monthly, annual and completion reports, claim documents)	Descriptive using mean item score
5.	To identify appropriate interventions for efficient delivery of public projects.	Provide necessary interventions to successfully deliver public projects	From the findings	From 1, 2,3 and 4 above	From findings

3.4 Instruments and methods for gathering data

Data collection techniques employed in the study was both qualitative and quantitative. Interviews and semi-structured questionnaires served as the research techniques. Project consultants, project managers, and contractors all received questionnaires. Interviews were also conducted to the same parties. Contract documents, monthly progress reports, completion reports, claim documents and general project files were reviewed to support the objectives of this study. The projects identified for the study were categorized into three: roads and transport, buildings and storm water drainage. This was informed by the fact that the Department of Urban Development undertakes infrastructure projects under these three divisions. The categorization was done so as to identify if complexity and nature of the projects had any effect on the success of implementation. This is necessary to collect enough data to achieve the study's goals. The appendix also contains the data collection tools.

3.5 Data sources

Primary and secondary sources made up the two categories for the data used in this study. The primary information came from conversations and semi-structured questionnaires. The secondary data came from contract documents, monthly progress reports, conclusion reports, claim papers, general project files, and literature evaluations on public infrastructure projects.

3.6 Study variables

The literature review affirmed the independent variables in evaluation of efficiency of internal and outsourced public projects in Kenya. These variables are the factors which bring about cost or time overrun in these projects. Further details are as shown in Table 2.

Table 2: Study variables

Item	Variable name	Variable type	Data source	Unit of measurement
1.	Construction time	Independent	Contract documents, monthly progress reports, completion reports, claim documents, project files	Ratio scale
2.	Construction cost	Independent	Contract documents, monthly progress reports, completion reports, claim documents, project files	Ratio scale
3.	Construction time overrun	Independent	Project Managers, Consultants, Contractors, Contract documents, monthly progress reports, completion reports, claim documents, project files	Ratio scale
4.	Construction cost overrun	Independent	Project Managers, Consultants, Contractors, Contract documents, monthly progress reports, completion reports, claim documents, project files	Ratio scale
5.	Success of internally managed and outsourced projects	Dependent	From findings	Likert scale

3.7 Data analysis

Before being loaded into the Statistical Package for Social Science (SPSS) for analysis, the obtained data was first edited and coded. Quantitative data was analysed using statistical methods that were descriptive, such as the mean item score, and qualitative information was subjected to the material analysis. Assessing the study's fundamental characteristics required descriptive statistical analysis, which involved using the chi square for testing hypotheses at the 5% level of significance. The relationship of various variables was tested to provide necessary interventions for efficient internally managed and outsourced projects.

3.8 Validity and reliability of data

According to Herper et al. (2010), dependability is a measure of how consistently the study instruments produce results after numerous trials. The simplicity and objectivity of the questionnaires and interviews in this study helped to improve this by preventing any ambiguity. Further, validity is defined as the accuracy of results in a study. The results in this study were enhanced by convenience sampling in which the choice of study respondents were based on the accuracy with which they provided the data.

4.0 CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the study findings and includes survey response, the response rate, project schedule / time, project budget, causes of project delay, and hypothesis testing.

4.2 Survey Response Rate and Findings

Table 3: Response Rate

Item No.	Item Description	Number of questionnaires / interviews issued	Number of questionnaires / interviews returned	Percentage response
1	Project Manager / Project Engineer/ Resident Engineer	17	14	82%
2	Contractors' Representatives	17	11	65%
3	Total	34	25	74 %

Source: Field Survey (2019)

A good response rate improves representativeness of results to the target population. Therefore, it influences the accuracy of an inquiry. According to Mugenda and Mugenda (2003) a response rate of at least 50% is considered as satisfactory. Table 3 indicates that the response rate is 74% of the project consultants and contractors interviewed which is good enough to make conclusive judgments about the findings in this study.

4.2.1 Projects Schedule / Time

An enquiry was made about the project schedule / time for the three categories of projects under evaluation in this study (Buildings, Storm Water Drainage and Roads and Transport). The findings on the project schedule and the actual time of completion for the sampled projects is as provided in Tables 4, 5 and 6.

Table 4: Project Schedule / Time for Building Projects

Project Name	**Management**	**Schedule / Time**	**Actual Time of Completion**
Construction of Mbita Retail Market	Internal	18 months	65 months
Construction of Daraja Mbili Market	Internal	24 months	41 months
Chaka Township Market Hub	Internal	24 months	36 months
Construction of Busia retail Market	Internal	12 months	96 months
Completion of Mudete Market	Internal	18 months	10 months
Karatina Market	Internal	24 months	29 months

Source: Field Survey (2019)

The findings as provided in Table 4 reveal that construction of Mbita Retail Market was scheduled to take 18 months but eventually was completed after 65 months. Similar delays were experienced in the Chaka Township Market Hub (scheduled to be finished after 24 months but finished after 36 months); construction of Busia Market (scheduled to be finished after 12 months but completed after 96 months); Daraja Mbili Market construction (scheduled to finish after 24 months but completed after 41 months and lastly, Karatina Market which too showed a slight delay (scheduled for 24 months but completed after 29 month). However, there was no delay for Mudete Market that was completed before scheduled time at 10 months instead of 18 months.

Table 5: Project Schedule / Time for Storm Water Drainage Projects

Project Name	**Management**	**Schedule / Time**	**Actual Time of Completion**
Mombasa Storm Water Drainage Phase II	Outsourced	24 months	40 months
Garissa Storm water Drainage	Outsourced	12 Months	15 Months
Machakos Storm Water Drainage	Outsourced	21 Months	24 Months
Embu Storm Water Drainage	Outsourced	15 months	22 months
Rehabilitation of Mtwapa Storm Water Drainage	Internal	24 Months	51 Months

Source: Field Survey (2019)

Table 5 provides the project schedule for the storm water drainage projects. The findings reveal that Mombasa Storm Water Drainage Phase II scheduled to take 24 months was completed in 40 months; Garissa Storm water Drainage was scheduled to take 12 months but eventually was completed after 15 months; the Machakos Storm Water Drainage was scheduled to be completed in 21 months took 24 months; Embu Storm Water Drainage was scheduled to be finished after 15 months but was finished after 22 months and the Rehabilitation of Mtwapa Storm Water Drainage was scheduled to be completed after 24 months but finished after 51 months.

Table 6: Project Schedule / Time for Roads and Transport

Project Name	**Management**	**Schedule / Time**	**Actual Time of Completion**
Mombasa Non-Motorized Transport Facilities	Outsourced	12 months	36 months
Eldoret Non-Motorized Transport Facilities	Outsourced	12 months	26 months
Thika Non-Motorized Transport Facilities	Outsourced	12 Months	24 Months
Nakuru Non-Motorized Transport Facilities	Outsourced	12 months	15 months
Rehabilitation of Kilifi Town Roads	Internal	18 Months	23 Months
Rehabilitation of Selected Roads in Kisii Town	Internal	24 Months	44 Months

Source: Field Survey (2019)

Table 6 provides the time schedules for the roads and transport projects. The study revealed delays in all projects with only Nakuru Non-Motorized Transport Facilities having a slight delay in comparison to the rest (scheduled to finish in 12 months but completed in 15 months) and Rehabilitation of Kilifi Town Roads scheduled at 18 months but completed after 23 months. The rest experienced long delays where Mombasa Non-Motorized transport facilities which was scheduled to complete after 12 months was eventually finished after 36 months; Eldoret Non-Motorized Transport Facilities finished after 26 months in contrast to after 12 months as scheduled; Thika Non-Motorized Transport Facilities was scheduled to finish after 12 months but completed after 24 months and Rehabilitation of Selected Roads in Kisii Town which completed after 44 months instead of after 24 months as scheduled.

From the findings, it can be noted that there are variations on the time of completion of both the externally managed projects and internally managed projects. However, the time variations were less for most of the storm water drainage projects which were managed externally and often by the World Bank and it is evident that they have shown consistency in meeting scheduled time vis

a vis the actual time. However, other internally managed projects have been characterized by delays in project completion unlike as scheduled.

Interviews conducted among the project managers in the internally managed projects showed key themes such as delay and inconsistency in honoring the payment certificates, conflict of interests between the employer and consultants and contractual issues raised by contractors. The construction process time frequently serves as an indication for evaluating the efficacy and efficiency of the construction organization in accordance with its project administration techniques (Hammadi & Nawab, 2016).

From the findings, externally managed projects exhibited less time variations over the internally managed projects indicating their level of success in terms of the time of completion (Oberlender, 2000). Additionally, what came out clearly from the interview responses by the project managers is that the time overrun is occasioned by the delay in terms of payment, inadequate contractor capacity and some of the services located along or in the vicinity of the proposed infrastructure such as power lines, telecommunication services, water supply and sewerage. The results are consistent with the work of Lock (2007), who argued that outwardly handled projects take into account a number of factors in the planning stage, including designer changes or errors, economic conditions, resource availability, and project party efficiency, which affect a project's level of success. The results might suggest the project in question scheduling ought to incorporate project description, personnel, cost, resources, timing, and working techniques to create the project's logical sequence of activities (Oberlender, 2000).

4.2.2 Project Budget / Cost

The review of the literature is supported Azha et al. (2008)'s assertion that cost is the key determinant of project success. This is due to the fact that cost is one of the main factors taken into account during the whole life cycle of an infrastructure development, and it may be considered one of the most crucial criteria for a project and the main factor determining project success. Accordingly, in order to determine the financial implications of the project delay, a study was conducted to compare the costs of projects managed domestically and externally.

The findings are provided in Tables 7, 8 and 9. It is clear from the findings that there are variations in terms of the budgeted cost and the actual cost after the project completion. For instance,

construction of Mbita Retail Market that was budgeted to cost KShs. 136,385,771.10, finally, cost was KShs. 151,564,233.84. Similarly, there were variations on the cost of completion for the projects; construction of Busia retail Market, Chaka Township Market Hub, Construction of Busia retail Market, completion of Mudete Market and completion of Karatina Market which all experienced a substantial increase in costs between scheduled and actual costs. This was also witnessed in the other projects in exception of Machakos Storm Water Drainage, Nakuru Non-Motorized Transport Facilities and rehabilitation of Kilifi Town Roads who used exact amount budgeted. The reason for the changes on the cost of these projects than early planned was due to the delay occasioned by the designer changes, unmapped underground services and unexpected ground conditions. Without competent project planning, it might be challenging to effectively monitor budget, determine the number of people needed, or carry out many other management tasks.

Table 7: Cost for Building Projects

Project Name	**Management**	**Budgeted cost**	**Actual cost**
Construction of Mbita Retail Market	Internal	Kshs. 136,385,771.10	Kshs. 151,564,233.84
Construction of Daraja Mbili Market	Internal	Kshs. 204,256,463.47	Kshs. 204,256,463.47
Chaka Township Market Hub	Internal	Kshs. 470Million	Kshs. 556M
Construction of Busia retail Market	Internal	Kshs. 15,739,596.41	Kshs. 38,791,905.31
Completion of Mudete Market	Internal	Ksh. 125,104,000.00	Kshs. 125,104,000.00
Completion of Karatina Market	Internal	Kshs. 202M	Kshs. 251M

Source: Field Survey (2019)

Table 8 : Cost for Storm Water Drainage Projects

Project Name	**Management**	**Budgeted cost**	**Actual Cost**
Mombasa Storm Water Drainage Phase II	Outsourced	Kshs. 1.6B	Kshs. 2.7B
Garissa Storm water Drainage	Outsourced	Kshs. 378,695,703.89	Kshs. 378,487,496.00
Machakos Storm Water Drainage	Outsourced	Kshs. 376,857,774.72	Kshs. 376,783,070.72
Embu Storm Water Drainage	Outsourced	Kshs. 284,765,912.00	Kshs. 284,699,901.00
Rehabilitation of Mtwapa Storm Water Drainage	Internal	Kshs. 277,499,252.43	Kshs. 276,910,322.37

Source: Field Survey (2019)

Table 9: Cost for Roads and Transport

Project Name	**Management**	**Budgeted cost**	**Actual cost**
Mombasa Non-Motorized Transport Facilities	Outsourced	Kshs. 646,636,133.20	Kshs. 791,629,233.37
Eldoret Non-Motorized Transport Facilities	Outsourced	Kshs. 630,367,253.94	Kshs. 634,369,093.00
Thika Non-Motorized Transport Facilities	Outsourced	Kshs. 630,621,897.58	Kshs. 629,926,865.77
Nakuru Non-Motorized Transport Facilities	Outsourced	Kshs. 646,636,133.20	Kshs. 646,636,133.20
Rehabilitation of Kilifi Town Roads	Internal	Kshs. 249,830,428.98	Kshs. 267,830,428.98
Rehabilitation of Selected Roads in Kisii Town	Internal	Kshs. 175,148,392.39	Kshs. 172,390,500.00

Source: Field Survey (2019)

In order to avoid cost overrun in projects, an enquiry was made into the success factors when it comes to cost control. The findings showed that providing overall summary to adherence of the project, accurate forecast on cost performance, comprehensive pretender site investigation, thorough understanding of the scope and no social and political interference. It is clear that despite

this understanding of the control cost factors to ensure project success, internally managed projects have failed to adhere to these factors leading to the project delay and subsequently cost overrun. In order for the vast majority of the World Bank's externally managed projects to with assurance allocate capital, minimize risk related to finances, and possibly lower the cost of capital, it may be necessary for the locally controlled assignments to offer a general overview of compliance to the project budget by correctly foreseeing the expense performance. When the project administration and supplier are aware of the scope early on, it increases managerial ability to produce results at a reasonable cost. A meticulous site inspection could aid in planning, which in turn aids in clarifying the scope and building a complete understanding beforehand, all of which are essential to increase the effectiveness of an independently managed project.

Table 10: Summary of Variances of Project Cost and Time

			TIME				COST			
		PM	Schedule (Months)	Actual (Months)	Variance		Budget (KShs)	Actual (KShs)	Variance	
					Var. (months)	Var. (%)			Var. (KShs)	Var. (%)
	Buildings									
1	Mbita Retail Market	Internal	18	65	47	261%	136,385,771.00	151,564,233.84	15,178,462.84	11.1%
2	Daraja Mbili Market	Internal	24	41	17	71%	204,256,463.47	204,256,463.47	-	0.0%
3	Chaka Township Market Hub	Internal	24	36	12	50%	470,000,000.00	556,000,000.00	86,000,000.00	18.3%
4	Busia retail Market	Internal	12	96	84	700%	15,739,596.41	38,791,905.31	23,052,308.90	146.5%
5	Mudete Market	Internal	18	10	-8	-44%	125,104,000.00	125,104,000.00	-	0.0%
6	Karatina Market	Internal	24	29	5	21%	202,000,000.00	251,000,000.00	49,000,000.00	24.3%
	Storm Water									
7	Mombasa SWD Phase II	External	24	40	16	67%	1,600,000,000.00	2,700,000,000.00	1,100,000,000.00	68.8%
8	Garissa SWD	External	12	15	3	25%	378,695,703.89	378,487,496.00	-208,207.89	-0.1%
9	Machakos SWD	External	21	24	3	14%	376,857,774.72	376,783,070.72	-74,704.00	0.0%
10	Embu SWD	External	15	22	7	47%	284,765,912.00	284,699,901.00	-66,011.00	0.0%
11	Mtwapa SWD	Internal	24	51	27	113%	277,499,252.43	276,910,322.37	-588,930.06	-0.2%
2	**Roads and Transport**									
12	Mombasa NMT Facilities	External	12	36	24	200%	646,636,133.20	791,629,233.37	144,993,100.17	22.4%
13	Eldoret NMT Facilities	External	12	26	14	117%	630,367,253.94	634,369,093.00	4,001,839.06	0.6%

14	Thika NMT Facilities	External	12	24	12	100%	630,621,879.58	629,926,865.77	-695,013.81	-0.1%
15	Nakuru NMT Facilities	External	12	15	3	25%	646,636,133.20	646,636,133.20	-	0.0%
16	Kilifi Town Roads	Internal	18	23	5	28%	249,830,428.98	267,830,428.98	18,000,000.00	7.2%
17	Selected Roads in Kisii Town	Internal	24	44	20	83%	175,148,392.39	172,390,500.00	-2,757,892.39	-1.6%
	Average Internally Managed					**142%**				**22.8%**
	Average Externally Managed					**74%**				**11.4%**

Source: Field Survey (2019)

4.3 Challenges of Internally Managed Projects

The literature review confirmed that internally managed projects have failed to ensure project success through project management. Some of the reasons for this, include poor definition of scope and goals for the project, lack of or inadequate planning, lack of defining deliverables, poor change management and poor planning and communication. To determine the most critical obstacle to influence policy and recommendation actions for this study, these factors were rated in order of significance. Table 11 summarises the difficulties experienced by internally managed initiatives. According to the results, every challenge has at least a mean score over 3.0 (the population mean) and should be taken into account if internal projects are to succeed just like external projects.

Table 11: Challenges of Internally Managed Projects

Challenge	**Mean score**
Poor definition of scope and goals	3.5
Lack of planning	3.6
lack of defining deliverables	3.7
Poor change management	4.1
Poor planning and Communication	4.5
Social and political interference	4.6

Source: Field Survey (2019)

The research of Yescombe (2007), whose investigations concentrated on domestically administered projects, is strongly similar to the conclusions of this study. Successful project scope and goal definition, product definition, project planning, efficient interaction, avoiding political and social interference, monitoring and communicating accomplishments of the project, appropriate change leadership, and managing hazards are key components that should be taken into account for internal initiative success. In line with the project management approach, these

factors enable timely completion of projects, within scope, time and cost. Nevertheless, just as confirmed in the literature review, the outsourced projects, effectively follow the above mentioned factors putting into perspective the project cost, scope and time to ensure efficiency and effectiveness of their projects. It is therefore essential that appropriate interventions are put in place to ensure that the above challenges are addressed to ensure success of internally managed projects.

The interviews by the project managers revealed that the public construction sector has not kept pace with the project delivery advancement. The time, cost, and scope overruns are common in government infrastructure projects. Time has shown that this paradigm is prone to failure, particularly when the design is lacking or contains too many mistakes and omissions. It becomes more challenging for the contractor to oversee the construction phase if the project owner, in this case the government, is unsure of its course of action and makes many changes to the work scope. In response to these circumstances, the contractors frequently ask for modification orders and submit claims for additional payment, explaining the rise in project costs for the domestically managed projects.

Therefore, the solutions to the challenges facing the internally managed projects can be viewed as the measures of effectiveness of a project. The ability of the project to provide requisite service / serve its purpose, sustainability of the project, project being within cost, time and scope as planned, good project management, carry out feasibility studies of projects before designs, collect all relevant information/data and carry out requisite tests/investigations, ensure that project fits into the big picture of the area it is located, i.e. according to development plans, masterplans, ensure relevant registered professionals are involved in the whole project cycle, ensure sufficient and adequate stakeholders' engagement is conducted, provision of adequate budget for projects, engagement of qualified contractors and consultants and ensure there are provisions/budget for project operations and maintenance. This will provide solutions to the challenges facing internally managed projects.

4.4 Hypothesis Testing

The literature review confirmed that completion time and the cost for both internally managed projects and outsourced projects are indirectly theoretical factors that indicate the level of effectiveness and efficiency of projects. The completion date serves as the standard for evaluating a project's effectiveness and performance. On the other hand, managing expenses entails keeping

an eye on performance by comparing the current costs allotted for the job to the budgeted costs allocated for the work in place, accomplished to date (Lock, 2007). Regardless of the size and complexity of the project, staying within budget is the primary criterion for success in any construction project (Memon & Rahman, 2013). These have implications in assessing the effectiveness and efficiency of projects and so the basis of comparison of internally managed public infrastructure and outsourced projects. This study hence tested the relationship between time variation in the internally managed public infrastructure and the outsourced projects as well as the cost variation in the internally managed public infrastructure and the outsourced projects as stated under section 1.5.

Table 12: Hypothesis Testing

		Test Value = 0					
	N	df	Significance level (-+5%)	t	Sig.	95% Confidence Interval of the Difference	
						Lower	Upper
Construction Cost	13	11	5	-1.906	0.831	-0.842	0.060
Construction Time	13	11	5	1.345	0.206	-0.100	0.415

1. That there is no difference in completion time variation between internally managed public infrastructure projects and those whose management is outsourced
2. That there is no difference in cost variation between internally managed public infrastructure projects and those whose management is outsourced

The null hypothesis are rejected on both tests and conclude that there is a difference in the completion time variation between internally managed public infrastructure projects and those outsourced as well as there is a difference in cost variation between the internally managed public infrastructure projects and those outsourced. The findings in both hypotheses are further supported by the interview responses of the project managers who viewed the outsourced projects to be well managed and hence do not suffer from cost overrun or time as compared to the internally managed infrastructure projects. The implications of these findings is that

managing cost and time is essential if efficiency and effectiveness of the internally managed projects is to be achieved.

4.5 Contributions of Independent Variables

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-2.521	3.195		-0.789	0.474
	Construction time	0.435	0.629	0.338	0.691	0.527
	Construction cost	1.285	0.315	1.121	4.080	0.015
	Construction time overrun	-0.288	0.336	-0.438	-0.859	0.439
	Construction cost overrun	-0.036	0.072	-0.096	-0.502	0.642

a. Dependent Variable: efficiency and effectiveness of projects (revised contract cost)

When the principles of the variables that are autonomous are known, it is possible to create a multiple regression that discusses the importance of all of these elements to the effectiveness and productivity of internally accomplished and contracted infrastructure improvements in Kenya using the B the coefficients corresponding to the four variables in question that are the measures of efficiency and efficacy of projects. As a result, the equation for prediction for the contribution of internally managed and externally contracted infrastructure projects in Kenya is based on coefficients.

Efficiency and effectiveness of infrastructural projects = - 2.521+ 0.435construction time + 1.285construction cost -0.288construction time overrun - 0.036construction cost overrun

It is clear that construction time overrun and construction cost overrun had a negative contribution while construction time and cost had a positive contribution to the effectiveness and efficiency of

the infrastructural projects in Kenya. A 1% change in all of the factors has an insignificant impact on the level of efficiency and effectiveness of infrastructural projects apart from the construction cost which had a significant impact thus increasing by 1.285%. This reveals that the most important consideration is the actual construction costs, if the challenges in the efficiency and effectiveness of infrastructural projects are to be addressed.

5.0 CHAPTER FOUR: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In order to reach conclusions and make suggestions for policy measures, this chapter discusses the summary of the study's key findings in relation to its objectives. It discusses how the work adds to our current understanding and suggests new research directions. It featured an overview of the key conclusions, recommendations, knowledge additions, and future research directions.

5.2 Summary of the study results

This study aimed at making comparisons on the effectiveness and efficiency of internally managed infrastructural projects and outsourced projects with the view of developing a guideline on how to improve internally managed infrastructural projects in Kenya. There were four objectives that guided the study.

5.2.1 Findings on Objective 1

This objective sought to analyze public infrastructural projects' schedule/ time for the internally managed and outsourced project management in Kenya. The findings indicated that both internally and externally managed projects had time overruns. However, the overruns were greater for the internally managed projects. The findings imply that internally managed projects did not meet the scheduled time for completion and hence suffer from time overruns as compared to the outsourced projects. This means that to ensure that internally managed infrastructural projects are able to finish within the scheduled time, the causes of time overrun should be addressed to ensure efficiency and effectiveness of the infrastructural projects.

5.2.2 Findings on Objective 2

The second objective sought to examine public infrastructural projects' budget/ cost for the internally managed and outsourced project management in Kenya. The findings showed that internally managed infrastructural projects faced higher budget / cost overrun as compared to the outsourced infrastructural projects. This is a sign that internally accomplished projects fall short in their ability to clearly define the project scope and goals, specify the deliverables, plan the project, communicate effectively, track and report project progress, implement sound management of change practices, and manage risks in a way that enables timely project completion and keeps it within budget and scope. This results in cost overrun for the internally managed projects over the outsourced projects that are characterized by effective scope definition and planning of the infrastructural projects.

5.2.3 Findings on Objective 3

This objective sought to identify causes of public infrastructural projects time overruns in internally managed and outsourced project management in Kenya. The findings revealed that poor definition of scope and goals for the project, lack of planning, lack of defining deliverables, poor change management and poor planning and communication were the cited reasons for project time overrun (Table 11). These factors are events and conditions that can affect or completely wreck flow of work and even lead to project cancellation altogether and hence well considered for the externally managed projects. This means that some of these causes of project time overrun are linked to the overall project delivery strategy.

5.2.4 Findings on Objective 4

This goal aimed to pinpoint the reasons for cost overruns on public infrastructure projects in Kenya that were both domestically and externally managed. The findings indicated a lack of a thorough pretender site assessment, a lack of contractor and project manager comprehension of the project's scope, a lack of participant confidence, and social and political meddling. This means that a poorly understood project restricts the amount of managerial ability to provide results within the allocated budget, which is possible if the project management and contractor have a clear understanding of the scope. As a result, rigorous site study contributes to effective planning, which in turn aids in defining the scope and creating a thorough understanding in advance. Understanding the financial implications and completing the project within budget are made possible by trust among project participants, which is a key component of project management.

5.3 Conclusions

The findings in this study indicate that there are no major differences in terms of completion time and cost for internally managed and outsourced infrastructural projects in Kenya. This is because any project is characterized by how effective they are in terms of defining the scope and goals for the project, planning, defining deliverables, change management and communication that have been cited to be the reasons for project time overrun. Additionally, the lack of a thorough pretender site assessment, the project manager's and contractor's lack of comprehension of the project's scale, the participants' lack of mutual trust, as well as social and political involvement, all contribute to higher project costs. This means that a misunderstanding of the project restricts the amount of managerial skills to provide results within the allocated budget, which is possible if the project management and contractor have a clear understanding of the scope.

As a result, effective and efficient project delivery includes a system for planning, financing, designing, building, operating, and maintaining activities that support the delivery of an item or service. This is in accordance with project management systems. And as a result, involves a type of contract used to transfer or share the risks associated with a project or the team's organizational structure. In order to achieve good results, it coordinates management tasks like planning, organizing, and directing building activities. The breakdown has a direct connection to project administration, which is the use of a variety of tools and strategies to coordinate the utilization of many resources towards the successful completion of a particular, intricate, one-time work while adhering to time, cost, and quality restrictions. Every assignment calls for a specific combination of these tools and approaches, organized to meet the task environment and life cycle (from inception to completion).

5.4 Policy Recommendations

The outcome of this study showed that both internally managed and outsourced infrastructural projects lack the necessary efficiency and effectiveness. However, the internally managed projects exhibited far less efficiency and effectiveness. This study recommends creating awareness on project definition and goals, planning to define the project deliverables, effective change management and communication to improve on the effectiveness and efficiency of projects in Kenya.

5.5 Areas of Further Research

This study has made a comparison of the effectiveness and efficiency of infrastructural projects in Kenya. The infrastructural projects in Kenya vary in terms of their performance and have different settings altogether. This warrants the need to examine other sectors in Kenya in order to pave way for general policy recommendations on the internally managed and outsourced projects.

BIBLIOGRAPHY

Akintoye, A., 2007. *Advancing Knowledge and Managing Procurement Opportunities: Public-Private Partnerships,* Lancashire: Centre for Sustainable Development.

Alinaitwe, H. & Ayesiga, R., 2013. Success Factors for the Implementation of Public–Private Partnerships in the Construction Industry in Uganda. *Journal of Construction in Developing Countries,* 18(2), p. 1–14.

Beyene, T. T., 2014. Factors for Implementing Public-Private Partnership (PPP) in the Development Process: Stakeholders' Perspective from Ethiopia. *International Journal of Science and Research (IJSR),* 3(3), pp. 792-797.

Chan, A. P. C., Scott, D. & Chan, A. P. L., 2004. Factors Affecting the Success of a Construction Project. *Journal of Construction Engineering and Management,* 130(1), pp. 153-155.

Cheung, E., Chan, A. P. & Kajewski, S., 2012. Factors Contributing to Successful Public Private Partnership Projects – Comparing Hong Kong with Australia and the United Kingdom. *Journal of Facilities Management,* 10(1), pp. 45-58.

Gayatri, V. & Saurabh, K., 2013. Performance Indicators for Construction Project. *International Journal of Advanced Electrical and Electronics Engineering, (IJAEEE),* 2(1), pp. 61-66.

Hearne, R., 2009. *Origins, Development and Outcomes of Public Private Partnerships in Ireland: The Case of PPPs in Social Housing Regeneration* , Ireland: Combat Poverty Agency.

Kimemia, J. G., 2015. *Determinants of Projects Delay in The Construction Industry in Kenya; The Case of Selected Road Projects Implemented By Kenya National Highways Authority in Kenya'S Coast Region,* Nairobi: UoN.

Kiteme, M. S., 2014. *Factors Influencing Completion of Construction Projects; A Case of Construction Projects In Nairobi Kenya.* Nairobi, University of Nairobi.

MBATHA, C. M., 1986. *Building Contract Performance: A Case Study of Government Projects in Kenya.,* Nairobi: UoN Library.

Memon, A. H. & Rahman, I. A., 2013. Analysis of Cost Overrun Factors for Small Scale Construction Projects in Malaysia Using PLS-SEM Method. *Canadian Centerof Science and Education,* 7(8), pp. 78-88.

Odediran, S. J. & Windapo, A. O., n.d. *A Systematic Review of Factors Influencing the Cost Performance of Building Projects,* s.l.: s.n.

Saqib, M., Farooqui, R. U. & Lodi, S. H., 2008. *Assessment of Critical Success Factors for Construction Projects in Pakistan.* Karachi, International Conference on Construction In Developing Countries.

Satankar, P. P. & Jain, S. S., 2015. Study of Success Factors for Real Estate Construction Projects. *International Research Journal of Engineering and Technology,* 02(04), pp. 804-808.

Tabish, S. Z. S. & Jha, K. N., 2011. Important Factors for Success of Public Construction Projects. *International Conference on Construction and Project Management,* IPEDR vol.15(2), pp. 64-68.

Talukhaba, A. A., 1999. *AN INVESTIGATION INTO FACTORS CAUSING CONSTRUCTION PROJECTS DELAYS: Case Study of High Rise Building Projects in Nairobi,* Nairobi: Department of Building Economics and Management, University of Nairobi.

APPENDICES

APPENDIX 1: LIST OF SELECTED PROJECTS

Buildings

i. Construction of Mbita Retail Market
ii. Construction of Daraja Mbili Market
iii. Chaka Township Market Hub
iv. Construction of Busia Retail Market
v. Construction of Mudete Retail Market
vi. Construction of Karatina Market

Storm Water Drainage

i. Mombasa Drainage Improvement Phase 2
ii. Garissa Storm water Drainage
iii. Machakos Storm water Drainage
iv. Embu Storm water Drainage
v. Rehabilitation of Mtwapa Storm Water Drainage

Roads and Transport

i. Mombasa Non Motorized Transport Facilities
ii. Eldoret Non Motorized Transport Facilities
iii. Thika Non Motorized Transport Facilities
iv. Nakuru Non Motorized Transport Facilities
v. Rehabilitation of Kilifi Town Roads
vi. Rehabilitation of Selected Roads in Kisii Town

APPENDIX 2: QUESTIONNAIRE AND INTERVIEW TOOL

Questionnaires

INFORMATION OF RESPONDENT

1. Name of project……
2. Designation of respondent on this project……
3. Experience in years on similar projects

1-2 years [ ] 3-5 years [ ]

6-8 years [ ] 9 – 10 years [ ]

CAUSES OF PUBLIC INFRASTRUCTURAL PROJECTS TIME AND COST OVERRUNS

4. Kindly tick appropriately on the success factors when it comes to cost control

Success Factor	Tick appropriately
Providing overall summary of adherence to budget	
Accurately forecast on cost performance	
Reduce financial risk	
Lower cost of capital	
comprehensive pretender site investigation	
Thorough understanding of scope	
High degree of trust shared by project participants	
no social and political interference	
Others (state)	

5. Kindly tick appropriately on the success factors when it comes to time management

Success Factor	Tick appropriately
Lack of social and political interference	
Proper project definition	
Effective management of people	
Proper communication channels	
Availability of resources	

Timing and methods of performing work that define logical sequencing of activities	
Building trust	
Good leadership	
Others (state)	

6. To what extent has your project been affected by the following factors where 1 = not important 2 = somewhat important 3 = neutral
15 = important 5 = very important

Factor	1	2	3	4	5
Lack of leadership					
Lack of trust in the project					
Limited resources					
Lack of proper communication					
Social and political interference					
Others (state)					

7. To what extent to you think that each of the following factors contributed to the time and cost overruns in your project, where 1 = not important 2 = somewhat important 3 = neutral
16 = important 5 = very important

Chance of occurrence 1 – low 2 = medium 3 = high

Cause of delay and cost	1	2	3	4	5	Chance of occurrence	1	2	3
Length of implementation of the project									
Limited professional skills by project team									
Delay in approval by engineer									
Poor organizational structure									

Complex interfaces in different work packages									
Delay in accessing the site									
Delay in procuring of materials and equipment									
Unexpected ground conditions									
Delayed payment to contractor									
Political interference									
Corruption									
Poor specifications on contract									
Under estimation of project duration									
Poor relations with financiers									

8. Kindly rank the following factors in order of importance to ensuring successful project completion where 1 = not important 2 = somewhat important 3 = neutral

= important 5 = very important

Factor	1	2	3	4	5
Define scope and goals of the project					
Define deliverables					
Project planning					
Effective communication					
Tracking and reporting project progress					
Proper change management					
Risk management					

Interviews

1. Kindly state factors which you consider might have contributed to the project delay, state in order of importance

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2. What are the factors which you consider might have contributed to cost overrun, state in order of importance

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3. Kindly comment on the measure of effectiveness in a project

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3. Kindly comment on the measure of efficiency in your project

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4. What are the best practices in project efficiency and effectiveness to complete projects on time in Kenya?

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5. What are some of the recommendations you could provide to ensure project success

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